Amendments to the Claims

The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Previously presented) A method for analysing the amount of free gas within a pharmaceutical sample, the method comprising the steps of:
a) providing a sample before an irradiating source;
b) irradiating the sample with at least one beam of electromagnetic radiation;
c) detecting radiation emitted from the sample;
d) generating signals corresponding to the amount of free gas in the sample; and,
e) correlating the generated signals to at least one solid state parameter of the sample.

2. (Previously presented) The method according to claim 1, wherein the emitted radiation comprises transmitted radiation from the sample.

3. (Previously presented) The method according to claim 1, wherein the emitted radiation comprises reflected radiation from the sample.

4. (Previously presented) The method according to claim 1, wherein the emitted radiation comprises transmitted radiation and reflected radiation from the sample.

5. (Previously presented) The method according to claim 1, wherein the free gas is oxygen.

6. (Previously presented) The method according to claim 1, wherein the free gas is carbon dioxide.

7. (Previously presented) The method according to claim 1, wherein the free gas is water vapour.

8. (Previously presented) The method according to claim 1, further comprising the step of detecting radiation emitted as a function of time.

9. (Previously presented) The method according to claim 1, wherein the solid state parameter represents the hardness of the sample.

10. (Previously presented) The method according to claim 1, wherein the solid state parameter represents the disintegrability of the sample.

11. (Previously presented) The method according to claim 1, wherein the solid state parameter represents the dissolvability of the sample.

12. (Previously presented) The method according to claim 1, wherein the solid state parameter represents the flowability of the sample.

13. (Previously presented) The method according to claim 1, wherein the solid state parameter represents the aggregation properties of the sample.

14. (Previously presented) The method according to claim 1, wherein the solid state parameter represents the density of the sample.

15. (Previously presented) The method according to claim 1, wherein the pharmaceutical sample is a solid sample.

16. (Previously presented) The method according to claim 15, wherein the pharmaceutical sample is positioned inside a blister of a blister pack.

17. (Previously presented) The method according to claim 1, wherein the radiation irradiating the sample comprises infrared (IR) radiation.

18. (Previously presented) The method according to claim 17, wherein the IR radiation is near infrared (NIR) radiation.

19. (Previously presented) The method according to claim 1, wherein the radiation has a wavelength in the range of from about 700 to about 2100 nm.

20. (Previously presented) The method according to claim 1, wherein the radiation irradiating the sample comprises visible light.

21. (Previously presented) The method according to claim 1, wherein the radiation irradiating the sample comprises UV radiation.

22. (Previously presented) The method according to claim 1, wherein the irradiating source comprises a diode laser.

23. (Previously presented) The method according to claim 1, wherein the emitted radiation is detected by a photo multiplier.

24. (Previously presented) The method according to claim 1, wherein the emitted radiation is detected by a photo diode.

25. (Previously presented) The method according to claim 1, wherein the analysis is conducted in a manufacturing area at-line.

26. (Previously presented) The method according to claim 1, wherein the analysis is conducted in a manufacturing area on-line.

27. (Previously presented) The method according to claim 1, wherein the analysis is conducted in-line in a manufacturing process vessel.

28. (Currently amended) The method according to [~~any one of claims 1-27 and 29-32,~~] claim 1, wherein the amount of free gas analysed within the pharmaceutical sample is used as feedback control data in a manufacturing process in order to obtain predetermined physico-mechanical characteristics of the pharmaceutical sample.

29. (Previously presented) The method according to claim 1, wherein the solid state parameter represents the diffusitivity of a gas in a sample.

30. (Previously presented) The method according to claim 15, wherein the solid sample is selected from the group consisting of a tablet, a granule, a capsule, a bulk powder, a pharmaceutical dose, and a pharmaceutical dosage form.

31. (Previously presented) The method according to claim 19, wherein the radiation has a wavelength in the range of from about 700 to about 1300 nm.

32. (Previously presented) The method according to claim 1, wherein the generated signals are correlated to more than one solid state parameter of the sample.